

STAND-UP TUBE WITH A DISPENSING NOSE

FIELD OF THE INVENTION

[0001] The present invention relates to a stand-up tube with a dispensing nose.

BACKGROUND OF THE INVENTION

[0002] Conventionally, caulk and similar products are contained in tubes manufactured as either squeezable tubes for squeeze and dispense operations or hard tubes for insert and trigger operations in caulk guns. The two types of conventional caulk tubes cannot be used interchangeably. Because of such lack of interchangeability, consumers are required to purchase caulk in different types of tubes for different applications. This incurs extra costs to consumers and retailers. For example, consumers must bear the extra costs of purchasing both types, when both types are needed, or settle on a tube type suited for most applications even though in few situations the other tube type may be better suited. Further, retailers of caulk tubes bear extra costs in shelving the two different types of caulk tubes instead of just one type. Hence, what is needed then is an improved container that can be used interchangeably as a squeezable container for squeeze and dispense operations and as a hard tube for insert and trigger operations in a dispensing device such as a caulk gun.

SUMMARY OF THE INVENTION

[0003] A container comprising a radially surrounding container sidewall having a first end and a second end, a dome coupled to the container sidewall at the first end, and a container nose coupled to the container sidewall at the second end. The dome comprises a neck portion for permanently sealing the container at the neck portion. The container nose encloses a channel leading into a space surrounded by the container sidewall.

[0004] The container according to the present invention can be used by a consumer in two ways. One way of using the container is as a squeezable container for dispensing a product therein by squeezing the container. The other way of using the container is for dispensing an enclosed product by applying pressure on a non-dispensing end of the container with a pressure applying device such as a plunger of a caulk gun. A sidewall of

the container folds as the pressure is applied, and an enclosed product is dispensed while the container is being folded.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The foregoing description of the invention will be apparent from the following, more particular description of an embodiment of the invention, as illustrated in the accompanying drawings wherein like reference numbers generally indicate identical, functionally similar, and/or structurally similar elements.

[0006] FIG. 1 depicts a container according to the invention.

[0007] FIG. 2 depicts the container having a dome placed in an inwardly projecting position according to the invention.

[0008] FIG. 3 depicts the container having a sidewall folded in by applying pressure with a plunger on the dome.

DETAILED DESCRIPTION OF THE INVENTION

[0009] Embodiments of the invention are discussed in detail below. In describing embodiments, specific terminology is employed for the sake of clarity. However, the invention is not intended to be limited to the specific terminology so selected. While specific exemplary embodiments are discussed, it should be understood that this is done for illustration purposes only. A person skilled in the relevant art will recognize that other components and configurations can be used without departing from the spirit and scope of the invention.

[0010] FIG. 1 depicts a side view of a container 100 according to an exemplary embodiment of the invention. The container 100 has a flexible, pliable sidewall 110 having a first end coupled to a dome 150 and a second end coupled to a container nose 170. The container sidewall 110 as formed is a radially surrounding sidewall of any type, including a substantially tubular sidewall that forms a circular, rectangular, triangular, oval and any other geometric shapes in its cross-section. The container sidewall 110 is flexible for being squeezed by hand and is pliable for being folded on itself. The container sidewall 110 has a first end which ends in a standing ring 120 on which the container can be freely stood with the container nose 170 at the second end of the container facing upwardly. A circumferential inset groove 112 can be formed in the container sidewall 110 a short

distance away from the standing ring 120 to reinforce the adjacent section of the container sidewall 110. In addition, a label can be applied to the container sidewall 110.

[0011] The container nose 170 has a nose/nozzle member 190 and an adjoining piece 180 that adjoins the container sidewall 110 and the nose member 190. The nose member 190 encloses a channel leading into a space surrounded by the container sidewall 110. The nose member 190 can be of any shape including, for example, a taper, sphere, oval, box or pyramid. When the nose member 190 has a tapered shape, it can be tapered stepwise or continually. The channel of the nose member 190 can extend from an opening into the container 100 at the end of the nose member attached to the container to a nose opening at an opposite end of the nose member 190. A cover/seal can be formed as a separate element from the nose member and can be provided on the nose opening to seal the container 100 at the end of the container nose 170. The cover/seal can be selectively removed from the nose member to allow dispensing of the enclosed product. Alternatively, the channel of the nose member 190 can extend from an opening into the container 100 at one end of the nose member 190 to a point just short of an opposite end of the nose member 190 so that a tip of the nose member 190 can be sealed. The seal can be removed (e.g., cut, severed, or broken off) to create a nose opening 200 for dispensing an enclosed product of the container 100. The adjoining piece 180 can be any piece that adjoins the sidewall 110 of the container and the nose member 190, including a planar radial wall, a ramped radial wall, a pyramidal wall and a hemispherical wall.

[0012] The dome 150 extends from the standing ring 120 and forms the terminus of the first end of the container sidewall 110. The dome 150 comprises a neck portion 130, which protrudes outwardly from the dome 150. The neck portion 130 has a neck opening 140, which extends completely through the neck portion 130 as an inlet for filling the container 100 with a product. After the container 100 is filled with a product through the neck opening 140, the neck opening 140 is sealed by, for example, flattening the neck portion 130 and heat sealing the flattened portion into a planar seam to seal the container. The sealing can be done by any method for sealing, including heat sealing with a sealing bar, compression sealing, glueing and placing (or forming) a cover on the neck opening. The closed portion of the neck opening may be flat or have a cross section of any shape including a cylindrical, oval, triangular, rectangular or square shape. The dome 150 can be of any geometrical shape, including spherical, cubical, and pyramidal shapes, that creates a

convex section in an outwardly projecting position of the dome 150 and can be easily inverted into a corresponding concave section in an inwardly projecting position of the dome 150 by flipping the section about a hinged connection 160 formed between the standing ring 120 and the dome 150. The dome 150 can be first formed in an outwardly projecting position. Containers having a similar configuration of a dome, standing ring and hinged interconnection are described in PCT Application No. PCT/US01/45602 filed on November 2, 2001, published as WO 02/38360 A1 on May 16, 2002, which is commonly owned by the present assignee and incorporated herein by reference.

[0013] Exemplary dimensions of the container 100 are as follows. The container 100 can be of any height as desired, including about 5-100 cm. A diameter of the outer surface of the neck portion 130 can be of any width, including about 5-40 mm and more specifically 20 mm. A diameter of the outer surface of the container sidewall 110 of the neck finish 30 can be of any width, including about 25-110 mm and more specifically 55 mm. The height of the neck portion 130 can be of any length including about 5-30 mm and more specifically 13 mm. A height of the nose member 190 can be of any length including about 35-200 mm and more specifically 76 mm.

[0014] The container 100 can be filled with the dome 150 in the outwardly projecting position as shown in Fig. 1, or in the inwardly projecting position as shown in Fig. 2. After the container 100 is filled and sealed, the dome 150 can be placed in the inwardly projecting position to enable the container 100 to stand on the circular standing ring 120. Once the dome 150 is in the inwardly projecting position, the dome 150 can be locked in that position (i.e., by appropriately forming the dome 150) to resist flipping to an outwardly projecting position when an external force is applied. Alternatively, the dome 150 can be formed without a lock mechanism and can freely flip from one position to the other repeatedly by applying appropriate external forces.

[0015] The container 100 can be formed of any flexible, pliable material that enables squeezing and folding the container sidewall 110 of the container 100 to dispense an enclosed product. Suitable plastic materials can include, for example, (1) thermoplastic materials including nylon, (2) polyolefins such as polyethylene or polypropylene, (3) polyesters such as polyethylene terephthalate, and (4) polycarbonates. The container can also be made of flexible, pliable thin laminated metallic materials such as aluminum laminates commonly used for toothpaste tubes.

[0016] A product stored in the container 100 can be dispensed through the nose member 190 in at least two ways after an opening is formed in the container nose 190. A first way to dispense an enclosed product is by squeezing the flexible sidewall 110 of the container. This forces the contents of the container through the channel in the container nose 190 and exiting at the nose opening 200. A second way to dispense the enclosed product is to apply pressure on the dome 150 (e.g., by pushing the dome with a plunger) and cause the container sidewall 110 to fold as shown in Fig. 3.

[0017] Referring to FIG. 3, a plunger 300 can include a plunger rod and a plunger head 310 as used in conventional caulk guns and is pushed against the neck portion 130 of the dome 150 with enough pressure to cause the container sidewall 110 to fold in, starting from a region of the container sidewall 110 adjoining the dome 150. As further pressure is applied to the neck portion 130 by the plunger 300, the container sidewall 110 folds on itself continually, and the fold progresses toward the second end of the container sidewall 110 to which the container nose 170 is coupled. While the container sidewall 110 is being folded, an enclosed product is dispensed from a nose opening 200 of the container nose 190 until the dome 150 touches and pushes against the container nose 170 and the enclosed product is almost completely dispensed.

[0018] The container 100 can have a one piece construction, wherein the entire container is formed as one piece, or a multi piece construction, wherein parts of the container 100 (e.g., the dome 150, the container sidewall 110 and the container nose 170 or parts of the container 100 that are segmented differently than the pieces) can be formed separately and subsequently combined. Similar tubes having sidewalls constructed of different materials are disclosed in PCT Application No. PCT/US03/13715 filed on May 2, 2003, which is commonly owned by the present assignee and incorporated herein by reference. In addition to the sidewall comprising more than one material, a particular part (e.g., the container nose 170) can be formed of a material different (i.e., any physical difference including color, flexibility, pliability, material, texture, etc.) from a material of another part (e.g., the container sidewall 110). For example, the container nose 170 can have a different color, transparency, flexibility, pliability or decorative appearance than the container sidewall 110. The container nose 170 can also be formed from the same material used for the container sidewall 110. When the same material is used for both the container nose 170 and the container sidewall 110, the thickness of the wall of the container nose 170 can be larger than

that of the container sidewall 110. Regardless of which materials are used for different parts, each part can have an in-mold or other labels applied to its surface while another part can be plain. Each part can be decorated by any method of creating labels or creating marks including, for example, pressure sensitive labels, dry offset, silk screen or heat transfer.

[0019] As to methods of manufacturing the container 100, the entire container can be formed by any suitable method in the art including, but not limited to extrusion blow molding, stretch blow molding, injection molding, injection blow molding and compression molding. For example, it can be made by extrusion blow molding. The neck opening 140 can be used as the blow hole through which an air injecting needle is inserted and the rest of the container 100 including the neck portion 130, dome 150, container sidewall 110 and container nose 170 is blow molded. The channel of the nose member 190 can be created subsequently after the blow molding process. Alternatively, the channel of the nose member 190 can be used as a blow hole through which an air injecting needle is inserted and the rest of the container is blow molded. The neck opening 140 can be created subsequently after the blow molding process.

[0020] When the container 100 has a multi piece construction, each part of the container 100 (e.g., pieces including the dome 150, the container sidewall 110 and the container nose 170 or parts of the container 100 that are segmented differently than the three pieces) can be formed by any suitable method in the art including, but not limited to extrusion, extrusion blow molding, stretch blow molding, injection molding, injection blow molding and compression molding. For example, the container nose 170 can be made by compression molding and/or injection molding, and the container sidewall 110 and the dome 150 can be formed by blow molding. After each part is manufactured, they can be joined together by any method for joining, including welding, spin-welding, ultra-sonic welding, gluing, etc.

[0021] In both the one piece and the multi piece constructions, the neck opening 140 and/or the channel of the nose member 190 can be created by any known method of creating an opening/channel. For example, the neck opening 140 (or the channel of the nose member 190) can be created by using the neck opening 140 (or the channel of the nose member 190) as a blow hole or needle insertion point to blow-mold/injection mold the rest of the neck portion (or the nose member 190). Alternatively, the neck opening 140 (or the channel of the nose member 190) can be created by forming a protrusion that extends out of the neck portion 130 (or the nose member 190) at the time the neck portion 130 (or the nose member

190) is formed, and trimming the protrusion subsequently to create the opening. Still another exemplary method of creating the neck opening 140 (or the channel of the nose member 190) is by reaming a neck opening 140 (or the channel of the nose member 190) into the neck portion 140 (or the nose member 190) with a closed end. In the above discussed embodiments, the nose member 190 can be created with a seal (i.e., a separate cover or incomplete channel) over the enclosed channel at the time that the nose member 190 is made (i.e., when the channel is not used as a blow hole). Alternatively, the channel of the nose member 190 can be closed by a cover/seal after the channel is formed.

[0022] As to the process of filling the container 100, the container 100 can be filled through the neck opening 140. The container can be filled with the dome 150 in an outwardly projecting position. Alternatively, the container can be filled with the dome 150 in an inwardly projecting position. After the container 100 is filled with a product, the neck opening 140 can be sealed by any method for sealing including, for example, using a sealing bar. When the container is filled with the dome in an outwardly projecting position, the dome 150 can be flipped to an inwardly projecting position so that the container can stand up on the standing ring.

[0023] The container 100 can be used to store and dispense any product, including liquid products and semi liquid products such as caulk, sealant and paint, and any readily flowing solid products such as powders or beads. Suitable caulk/sealant material can include mono caulking/sealing compounds, silicone caulk/sealant, latex, oil based caulk, butyl rubber and polyurethane foam. The neck portion 130 of the container 100 can be applied with pressure from any pressure applying device used for dispensing a liquid, semi-liquid, or readily flowing solid product, including a plunger used in a caulk gun.

[0024] The embodiments illustrated and discussed in this specification are intended only to teach those skilled in the art the best way known to the inventors to make and use the invention. Nothing in this specification should be considered as limiting the scope of the present invention. All examples presented are representative and non-limiting. The above-described embodiments of the invention may be modified or varied, without departing from the invention, as appreciated by those skilled in the art in light of the above teachings. It is therefore to be understood that, within the scope of the claims and their equivalents, the invention may be practiced otherwise than as specifically described.